

CLAIMS

We claim:

1. A plasticized polyolefin composition comprising from 99.9 wt% to 60 wt% polyolefin; and from 0.1 wt% to 40 wt% of a non-functionalized plasticizer; wherein the non-functionalized plasticizer comprises C₆ to C₂₀₀ paraffins having a pour point of less than -5°C.
2. The composition of Claim 1, wherein the non-functionalized plasticizers comprises C₈ to C₁₀₀ paraffins.
3. The composition of Claim 1, wherein the non-functionalized plasticizers comprises C₆ to C₅₀ isoparaffins.
4. The composition of Claim 1, wherein the non-functionalized plasticizers comprises C₁₀ to C₁₀₀ n-paraffins.
5. The composition of Claim 1, wherein the T_g of the polyolefin decreases from 4 to 10°C for every 4 wt% of non-functionalized plasticizer added to the composition, while the T_m remains within 1 to 2 °C.
6. The composition of Claim 1, wherein the non-functionalized plasticizer has a pour point of less than -30°C.
7. The composition of Claim 1, wherein the non-functionalized plasticizer has a viscosity of from 0.1 to 3000 cSt at 100°C.
8. The composition of Claim 1, wherein the non-functionalized plasticizer has a dielectric constant at 20°C of less than 2.1.
9. The composition of Claim 1, wherein the non-functionalized plasticizer has a specific gravity of less than 0.91 g/cm³.

10. The composition of Claim 1, wherein aromatic moieties are substantially absent from the non-functionalized plasticizer.
11. The composition of Claim 1, wherein the weight average molecular weight of the non-functionalized plasticizer is from 100 to 25,000 g/mol.
12. The composition of Claim 1, wherein the weight average molecular weight of the non-functionalized plasticizer is from 200 to 10,000 g/mol.
13. The composition of Claim 1, wherein the polyolefin comprises segments that are isotactic.
14. The composition of Claim 1, wherein the polyolefin is selected from propylene homopolymers, propylene copolymers, and propylene impact copolymers, and mixtures thereof.
15. The composition of Claim 1, wherein polyolefin is isotactic polypropylene.
16. The composition of Claim 1, wherein the polyolefin is a copolymer comprises propylene derived units and units selected from ethylene derived units and C₄ to C₂₀ α -olefin derived units.
17. The composition of Claim 11, wherein the polyolefin is a propylene impact copolymer comprising from 40% to 95% by weight of a Component A and from 5% to 60% by weight of a Component B based on the total weight of copolymer; wherein Component A comprises propylene homopolymer or copolymer, the copolymer comprising 10% or less by weight ethylene, butene, hexene or octene comonomer; and wherein Component B comprises propylene copolymer, wherein the copolymer

comprises from 5% to 70% by weight ethylene, butene, hexene and/or octene comonomer, and from 95% to 30% by weight propylene.

18. The composition of Claim 14, further comprising a plastomer.
19. The composition of Claim 1, wherein polyethylene having a weight average molecular weight of from 500 to 10,000 is substantially absent.
20. An article of manufacture selected from films, sheets, fibers, woven and nonwoven fabrics, tubes, pipes, automotive components, furniture, sporting equipment, food storage containers, transparent and semi-transparent articles, toys, tubing and pipes, and medical devices comprising the composition of Claim 1.
21. A plasticized polyolefin composition comprising from 99.9 wt% to 60 wt% polyolefin; and from 0.1 wt% to 40 wt% of a non-functionalized plasticizer; wherein the T_g of the polyolefin decreases by at least 2°C for every 4 wt% of non-functionalized plasticizer added to the composition, while the T_m remains constant.
22. The composition of Claim 21, wherein the non-functionalized plasticizers comprises C_8 to C_{100} paraffins.
23. The composition of Claim 21, wherein the non-functionalized plasticizers comprises C_6 to C_{50} isoparaffins.
24. The composition of Claim 21, wherein the non-functionalized plasticizers comprises C_{10} to C_{100} n-paraffins.
25. The composition of Claim 21, wherein the T_g of the polyolefin decreases from 4 to 10°C for every 4 wt% of non-functionalized plasticizer added to the composition, while the T_m remains constant.

26. The composition of Claim 21, wherein the non-functionalized plasticizer has a pour point of less than -5°C .
27. The composition of Claim 21, wherein the non-functionalized plasticizer has a viscosity of from 0.1 to 3000 cSt at 100°C .
28. The composition of Claim 21, wherein the non-functionalized plasticizer has a dielectric constant at 20°C of less than 2.1.
29. The composition of Claim 21, wherein the non-functionalized plasticizer has a specific gravity of less than 0.91 g/cm^3 .
30. The composition of Claim 21, wherein aromatic moieties are substantially absent from the non-functionalized plasticizers.
31. The composition of Claim 21, wherein the weight average molecular weight of the non-functionalized plasticizer is from 200 to 25,000 g/mol.
32. The composition of Claim 21, wherein the weight average molecular weight of the non-functionalized plasticizer is from 200 to 10,000 g/mol.
33. The composition of Claim 21, wherein the polyolefin is an isotactic propylene homopolymer.
34. The composition of Claim 21, wherein the polyolefin is selected from propylene homopolymers, propylene random copolymers, propylene block copolymers, propylene impact copolymers, and mixtures thereof.
35. An article of manufacture selected from films, sheets, fibers, woven and nonwoven fabrics, tubes, pipes, automotive components, furniture, sporting equipment, food storage containers, transparent and semi-

transparent articles, toys, tubing and pipes, and medical devices comprising the composition of Claim 21.

36. A method of plasticizing a polyolefin comprising blending a polyolefin with a non-functionalized plasticizer; wherein the non-functionalized plasticizer comprises C₆ to C₂₀₀ paraffins having a pour point of less than -5°C.
37. The method of Claim 36, wherein the blending comprises melt blending.
38. The method of Claim 36, wherein the melt blending is performed in an extruder.
39. The method of Claim 36, wherein the blending comprises wet blending of solid polyolefin.
40. The method of Claim 36, wherein the polyolefin is in the form of reactor granules or extruded pellets.
41. The method of Claim 36, wherein the reactor granules have an average diameter of from 10 µm to 5 mm.
42. The method of Claim 36, wherein the non-functionalized plasticizer has a pour point of less than -30°C.
43. The method of Claim 36, wherein the non-functionalized plasticizer has a viscosity of from 1 to 3000 cSt at 100°C.
44. The method of Claim 36, wherein the non-functionalized plasticizer has a viscosity of from 2 to 300 cSt at 100°C.

45. The method of Claim 36, wherein the non-functionalized plasticizer has a specific gravity of less than 0.91 g/cm³.
46. The method of Claim 36, wherein the non-functionalized plasticizers comprises C₈ to C₁₀₀ paraffins.
47. The method of Claim 36, wherein the non-functionalized plasticizers comprises C₆ to C₅₀ isoparaffins.
48. The method of Claim 36, wherein the non-functionalized plasticizers comprises C₁₀ to C₁₀₀ n-paraffins.
49. The method of Claim 36, wherein the polyolefin comprises segments that are isotactic.
50. The method of Claim 36, wherein the polyolefin is a homopolymer or copolymer comprising propylene derived units.
51. The method of Claim 36, wherein the polyolefin is a propylene homopolymer.
52. The method of Claim 36, wherein the copolymer comprises propylene derived units and units selected from ethylene derived units and C₄ to C₂₀ α -olefin derived units.
53. The method of Claim 36, wherein the copolymer is selected from random copolymers, block copolymers, impact copolymers, and mixtures thereof.
54. The method of Claim 36, wherein plasticizers such as phthalates, adipates, trimellitate esters, and polyesters are substantially absent.

55. The method of Claim 36, wherein polyethylene having a weight average molecular weight of from 500 to 10,000 is substantially absent.
56. An article of manufacture selected from films, sheets, fibers, woven and nonwoven fabrics, tubes, pipes, automotive components, furniture, sporting equipment, food storage containers, transparent and semi-transparent articles, toys, tubing and pipes, and medical devices made by the method of Claim 36.